CLAIMS

1. A method of detecting the passage of an edge of a moving sheet of material at a position, comprising:

monitoring a state of motion at a position; and

determining a time of an edge of the sheet at a position as a time at which a change in a state of motion at the position is detected.

2. A method according to claim 1 wherein determining comprises:

determining a time of passage of a leading edge as a time at which motion is first detected.

3. A method according to claim 1 or claim 2 wherein determining comprises:

determining a time of passage of a trailing edge of the sheet as a time at which detection of motion ceases.

4. A method according to any of claims 1-3 wherein monitoring a state of motion comprises optically monitoring whether motion of an object exists at the position.

5. A method according to any of claims 1-4 wherein monitoring comprises determining if a Doppler shift exists between radiation illuminating the position and radiation reflected at the position.

6. A method according to claim 5 wherein the presence of motion is determined to exist if the power of the reflected illumination within a band of Doppler frequencies is above a threshold.

7. A method according to claim 6 wherein the threshold for determining onset of motion is different from the threshold for determining cessation of motion.

8. A method according to any of claims 5-7 including providing a local oscillator for determining the Doppler shifts.

9. A method according to any of claims 5-8 wherein a portion of the illuminating radiation is used as a local oscillator in detecting Doppler shifts.

10. A method according to claim 9 wherein the local oscillator comprises optical radiation reflected from a surface.

11. A method according to claim 9 wherein the local oscillator comprises radiation back diffracted from a diffracting surface.

12. A method according to any of claims 8 wherein the local oscillator is focused on a sensor used to detect the Doppler shifts.

13. A method according to claim 12 wherein the local oscillator is focused essentially to a point.

14. A method according to any of claims 5-13 wherein the position is comprised in an area illuminated by radiation, said area comprising an entrance side at which a sheet enters the area and an exit side at which the sheet leaves the area.

15. A method according to claim 14 wherein the radiation illuminating the area is formed to provide a sharp illumination boundary at at least one of the entrance and exit sides of said area.

16. A method according to claim 15 wherein the radiation illuminating the area is formed to provide a sharp illumination boundary at both the entrance and exit sides of the area.

17. A method according to any of claims 14-16 wherein the arrival of an edge is determined by Doppler energy produced at said entrance side of said area by a leading edge of said sheet.

18. A method according to any of claims 14-17, wherein a trailing edge is determined by a cessation of detection of Doppler energy from said exit side of said position from a trailing edge of said sheet.

19. A method according to any of claims 14-18 wherein the position has an extent between entrance and said exit side.

20. A method according to claim 19 wherein said extent is between about 1 mm and about 5 mm.

21. A method according to claim 20 wherein the extent is between about 2 mm and about 4 mm.

22. A method according to claim 21 wherein the extent is about 2 mm.

23. A method according to any of claims 14-22 and including detecting the presence of a non-moving sheet between the entrance and exit.

24. A method according to any of claims 14-22 and including measuring the velocity of the sheet.

25. A method according to any of claims 14-22 and including measuring the distance the sheet translates.

26. A method according to any of claims 5-25 wherein the radiation is IR radiation.

27. A method according to any of claims 5-26 wherein the radiation is laser illumination.

28. A method according to any of the preceding claims wherein the time at which a sheet enters the position is determined to an accuracy better than about 0.5mm/v sec, where v is the velocity of the sheet.

29. A method according to claim 28 wherein the accuracy is better than 0.1 mm/v sec.